

Cryogenic Summary - Testing D1L102 in MAGCOOL

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- Test Configuration for D1L102
- Tests Performed
- Summary

Test Configuration for D1L102

- Warm bore tube not installed

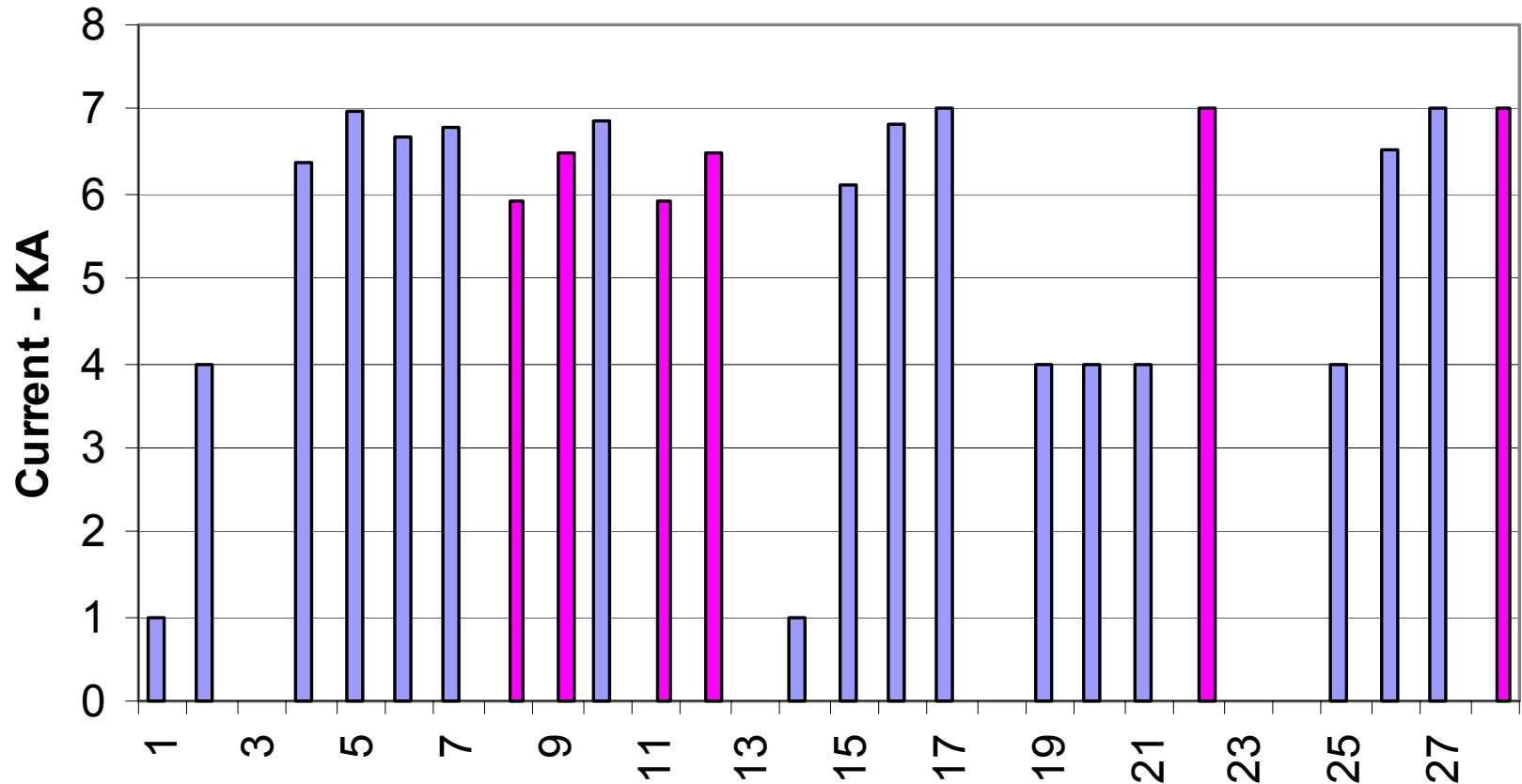
Operation Summary

- 6/11 - 12 Initial cooldown, 300 – 100 K,
100 – 4.5 K
- 6/13 Working on data acquisition
system for power supply when
magnet is 4.5 K instead of 300 K
- 6/14 Test (4000A, 6504A, 7000 A),
Ramp to 7000 A - 5 times
Stay at 7000 A ~ 30 minutes

Main Results

- Good quench result
- Ramp to 7000A and down
- The cryogenic system works properly with operator carefully control lead flow as before

Quench Current for D1L103, 104 & 102



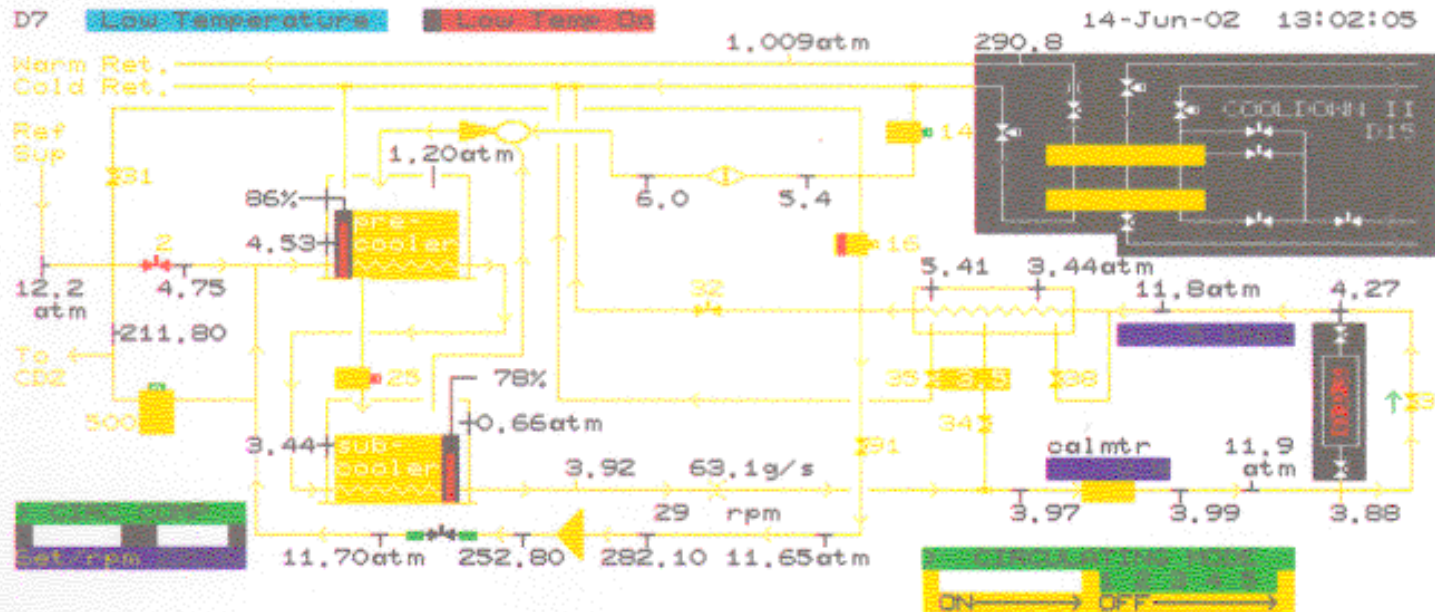
Quench, No. 1 - 12 D1L103 (with w. b.)

(No. 8, 9, 11, 12 field measurement with w.b.)

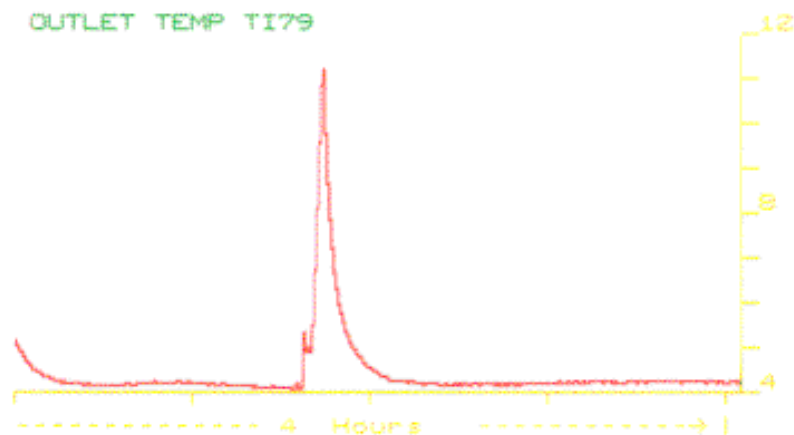
No. 14 - 22, D1L104 (warm bore removed), No. 22 no quench

No. 25 - 27, D1L102 (warm bore removed), No. 28 no quench

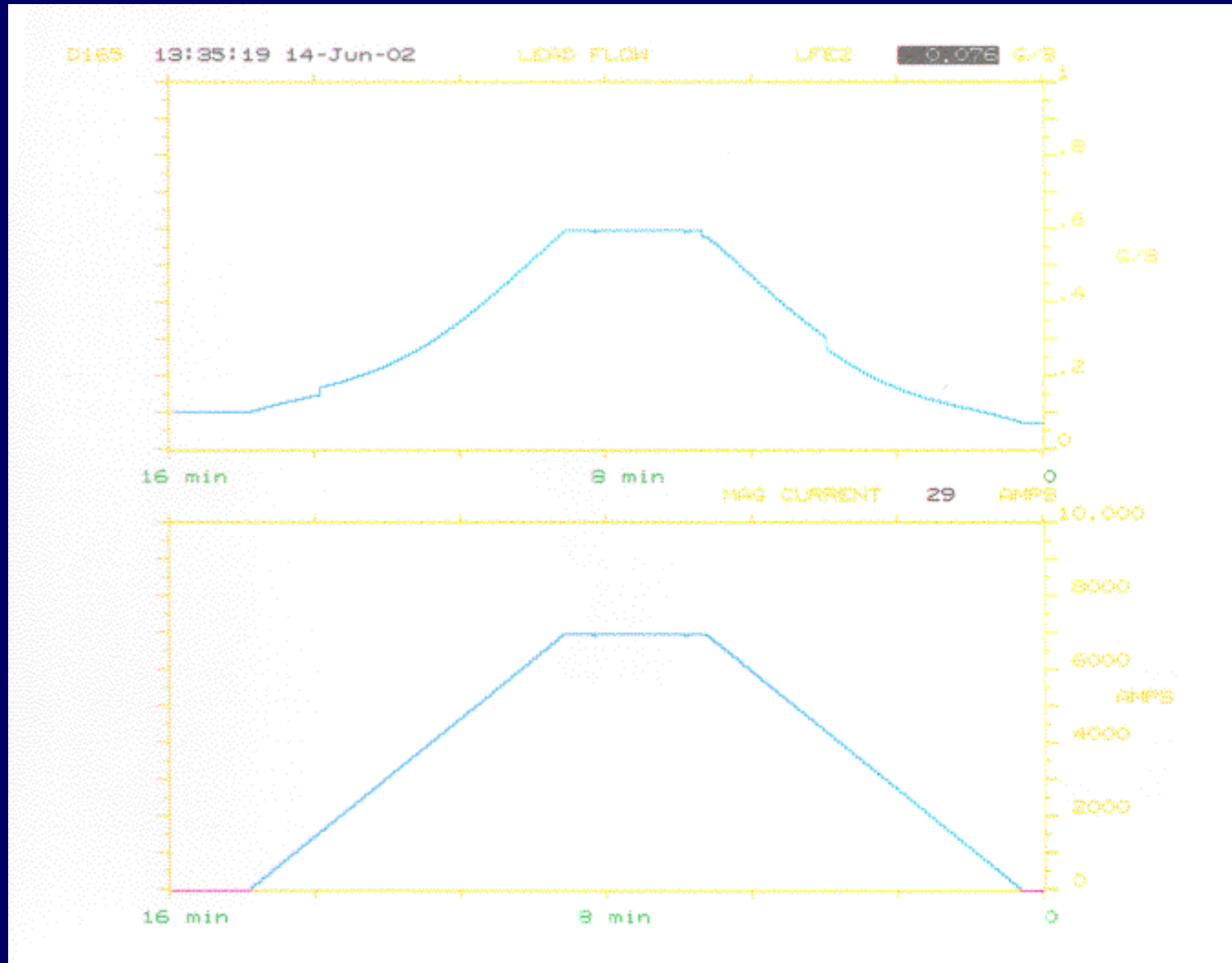
Operating condition for D1L102 (0.1 g/s flow through each lead)



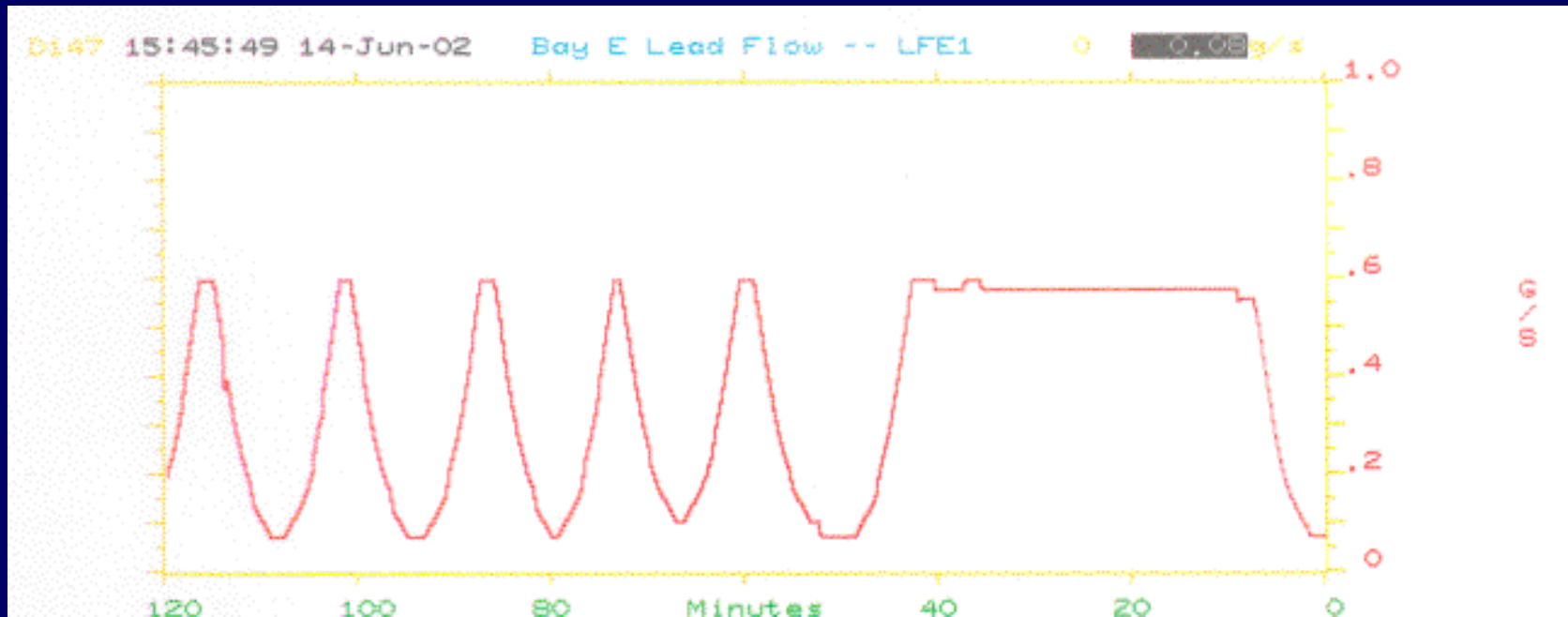
Circ. Loop Makeup ADV500	Subcool Level ADV25	Bypass J.T. ADV14
Z9	-14	-12
PB-- 150 RS-- 10.0 RT-- 0.0	PB-- 100 RS-- 2.0 RT-- 0.1	PB-- 150 RS-- 10.0 RT-- 0.0



Lead Flow and Current - Ramp to 7000A and down



Lead Flow - Ramp to 7000A and down 6 times



Precooling 7500 A Lead

- Tare flow was set at 0.10 to 0.12 g/s, some lead cooling is needed
- Need to reduce lead flow after peak current is reached and during ramp down
- With 0.120 g/s lead flow, voltage on (-) lead is ~ 0.043 V at 7000 A. Warm end of the lead become frosty and need to reduce Tare flow to 0.07 – 0.08 g/s.

Problem

- During the first ramping up, voltage across lead and bus are too high. The operator ramp D1 to 2900 A and then 1000 A for the recovery. Tare flow was increased to 0.10 and 0.12 g/s for ramp up.
- A cold leak 1×10^{-6} in the Feed Can End was found. The leak went Off Scale after a quench.
- During the electrical check on 6/13, fake current signal used for the check procedure causes flow through the leads. The warm end of the lead freeze. Helium leak out from the O-ring of the (+) lead. The cryo operators quickly reduce pressure in D1 and use heat gun to warm up the lead. The incident took about 25 minutes to recover.

Summary

- Complete test D1L102 as plan
- Cryogenic characteristic same as previous D1